**Nuclear Power is Not the Answer to the Greenhouse Problem**

To the folks who bring us nuclear power, this year's drought is a bonanza. They don't have to advertise any more, the media are doing it for them. Nearly every report on the drought calls it a sign of the global greenhouse effect. One cause of greenhouse warming is carbon dioxide from burning fossil fuels. Nuclear power produces no carbon dioxide. Therefore, the logic goes, to prevent more droughts, we should nuclearize in a big way.

The problem with this logic is that it doesn't hold up when you run out the numbers. Bill Keepin and Gregory Kats, energy analysts at Rocky Mountain Institute in Old Snowmass, Colorado, have figured out what it would take for nuclear power to replace fossil fuels. Their numbers suggest that there is a solution to the greenhouse problem -- but it isn't nuclear.

Suppose the world's nations agree to replace all present and future uses for coal with nuclear power, and to do so within 40 years. (Coal, rather than oil or gas, because coal is the greatest carbon-emitter, and because nuclear can substitute directly for coal in making electricity.) Keepin and Kats make the deliberately optimistic assumption that each nuclear plant can be built in only six years and at a cost of $1000 per kilowatt capacity (the reported figures for France -- in the U. S. nuclear plants take 12 years and cost $3200 per kilowatt.)

If world energy demand grows by 3.5 times between now and 2025, Keepin and Kats calculate that substituting nuclear for coal would require 8000 large nuclear plants, as opposed to the 350 operating today. New ones would have to come on line at an average rate of one every 1.6 days, at a cost of 787 billion dollars per year, for 38 years.

Even with this enormous shift to nuclear power, carbon dioxide emissions would grow to be 65 percent higher than they are now. Greenhouse warming would be rampant. The drought of '88 would look like a cool spell.

If energy demand goes up more slowly, doubling by 2025, and again nuclear is systematically substituted for coal, one new nuclear plant would be required every 2.4 days, at a cost of $525 billion annually. There would be 18 times as many nuclear plants as there are today. Carbon dioxide emissions would grow until the turn of the century and then slowly fall, but they would always be higher than they are now. The greenhouse effect would go on getting worse.

Nuclear power is ineffective in combating greenhouse warming because it only provides electricity, which accounts for just one-third of fossel-fuel use. Fossil fuel use accounts for only about half of the greenhouse problem (the rest comes from deforestation and from gases other than carbon dioxide). And nuclear starts from too low a base and takes too much time and money to replace coal quickly.

Even if the managerial capacity were available to construct so many plants so fast, the drain of capital into nuclear construction would slow the very economic growth that is assumed to require so much power in the first place. And of course the problems of nuclear power -- dangerous wastes, threats to public health, decommissioning, diversion of materials into bombs, vulnerability to terrorism -- all would escalate.

Now for the good news. There are ways to ameliorate greenhouse warming. They involve state-of-the-art design to meet energy needs efficiently. That doesn't mean cold rooms, warm beer, and general deprivation. It means being smart about warming rooms and cooling beer, so as to use the least possible amount of energy.

Unlike nuclear, efficiency improvements are fast and cheap, and they apply to every kind of energy use, including transportation. Changing all the light bulbs in America to the most efficient ones now available could shut down 40 large coal-fired power plants and save the nation $10 billion a year. If new office buildings were constructed in the most energy-efficient way, they would save the equivalent of 85 power plants and two Alaska oil pipelines, at no increased cost. If the fleet efficiency of U.S. cars doubled from the present 18 miles per gallon to 36, automobile carbon emissions could be cut in half (another half if the fleet reached the 78 mpg of some current five-passenger full-size test vehicles.) As a side benefit there would be huge reductions in urban air pollution, acid rain, and Persian Gulf military costs.

According to one study, with a major commitment to energy efficiency the industrialized nations could maintain GDP growth rates of 1-2 percent per year and cut per capita energy use in half. The developing countries could grow even faster and keep per capita energy demand nearly constant. Carbon emissions would decline. Add a shift to solar energy and reforest the earth, and the greenhouse problem could be reduced dramatically.

Some folks are so bedazzled by nuclear power (usually because their own finances or status depend on it) that they can think of only one answer to any energy problem. They understate the limitations of nuclear, they assume it can produce miracles without stopping to calculate costs, and they don't see other choices at all.

Those of us with no stake in the nuclear industry can be more rational. We don't have to choose between living near a nuke or turning our grainbelt into a desert. We can see other solutions to the greenhouse problem and start with the quickest and cheapest ones first. At current costs a dollar spent on energy efficiency displaces nearly SEVEN TIMES as much carbon as a dollar spent on nuclear, does it sooner, and does not generate long-lived radioactive wastes. The same dollar can't be spent twice. It makes sense to spend it on efficiency.